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On the Doctrine of Critical Days in Fever.

By John Bellinger.

"Tis plausible in theory, & true in experience."

Robert Jackson.

Concise & disconnected as these few observations may at first appear, still it is hoped that they are of such a nature, & are so arranged, that, by a well informed mind, they may readily be referred to other & more extensive series of Physiological & Pathological facts, which may be adduced in their support.

Before proceeding to the consideration of the subject more immediately before me, I propose to make a few remarks upon the nature of critical terminations in general.

Acting upon a firm persuasion of the truth of the Humoral pathology, the Ancients naturally attributed the appearance of "critical discharges" to the evacuation of "morbific matter." So far their Theory was ingenious and plausible, & had their practise been rightly deduced from it, it might have been harmless if not beneficial. But in conceiving that those diseases in which these evacuations usually occurred were atonic in their immediate tendency; and that nature required the assistance of stimulant remedies to compleate the operations by which they supposed the cure was effected; they drew their conclusions from false premises; not carefully investigating the

* See Burns on Inflamation- Cluttenbuck on Fever- Cooper's & Travers' Surgical Essays, Chap- on Sutis, and particularly a letter from Dr Farre therein inserted. Roseau on Absorption. &c. &c. &c. &c —

effects of the medicines they administered.
As experiment attempted a new system of Therapeutics, & experience justified the innovation, the Pathology, upon which the old method of cure was founded, came to be ridiculed and abandoned: and as in other revolutions the change was intended to be neither partial nor temporary.
It has been reserved for modern ingenuity to disclose the principle upon which these effects depend; and so clearly to reveal the mystery of natures operations, that by establishing certain actions in the system, we bring diseases at once to a favourable crisis, which might otherwise be tedious in duration, distressing in their consequences, or fatal in their termination.* Dropsy, for instance is no longer considered as so entirely dependent upon inequilibrium of the functions of certain systems

of vessels as to be cured by a class of medicines calculated to act on these alone. No- whatever establishes an action similar to the natural one; in other words, brings back the system to a healthy state, prevents, or removes the effusion, which is its most striking characteristicks. Thus it has yielded, when the whole class of Diuretics has failed, to remedies apparently foreign in their application, to the nature of the case.

Disavowing therefore this tenet of the humoral pathologists, we look upon depositions in the urine, sweats, diarrhoeas &c not as testimonies of the expulsion of morbific matter, but as evidences of the recommencement of actions, which had been suspended during the violence of disease.

The desiderata then, in our Practice,

are, to ascertain the nature of the deranged action, and the means best calculated to induce the natural one.

The nature of acute diseases is generally well understood, their Pathology well defined and their treatment obvious: still we have often to lament, not our ignorance of Therapeutics, but the inefficacy of our Materia Medica. Notwithstanding experience warrants our assigning to certain of them, the property of exciting specific actions in the human system, they have often obstacles to remove before their effects can be manifested, and should these obstructions exceed the limits of their power, they fail in fulfilling our intentions. Others, after having a few times exerted their influence in our favour, appear to lose the power they formerly possessed over some individual constitutions, & become inert upon exhibition, or assume, what is more perplexing,

* All modern works are full of these complaints: but for a lively & feeling exposition of them, see Johnson on Tropical Climates, particularly the Chapter on Dysentery.

† See the Aphorisms and Books on Prognostics, of Hippocrates, for the substance of the doctrine, and his Book on Epidemics for the facts on which it is founded.

‡ Galen, Van Swieten, &c

P See Rees Cyclopoedia, article "Critical Days."

a kind of retrograde action; aggravating rather than alleviating the distresses of our patients. *

The subject I have chosen carries with it every circumstance of ambiguity, uncertainty & might authorize to recommend it to our attention, for unless we first have the consideration of these alone, without carefully examining its other pretensions to our belief, subscribe to the doctrine; in this the "Father of Medicine" was to blame, though it was fostered by some the most eminent of his successors †; & was, & is still, supported with all imaginable learning & ingenuity; "in the opposition" we behold the names of Herostratus, Theodidactes, Cousins, emulating a host of more P

If it has been advanced with confidence, it has been opposed with asperity; its supposed inconsistency with absurd origin have been ridiculed, the doctrine of the humoral pathology, & even

it may well be considered an advantage, that one
continues; and the pace at which it is [illegible]
said to be supposed have been conducted.
It becomes us therefore scrupulously to investigate
its claims to our attention, & impartially to ex
amine [illegible] the arguments of the dis-
putants on whichever side with either party
As however this essay is intended, not for the
amusement of the antiquarian, but rather for
the instruction of beginners in the Science, to
shall a list of the principal objections that have
been urged against it, and a brief account
of improvements suggested, is all I propose.
It may be thought requisite, as being intimately
connected with my subject, that I should en-
deavour to lay down some fixed idea of
time. I shall however refrain from entering
upon this "debatable ground;" for it is perhaps
less difficult to define the exact meaning

* vide Copland's Appendix to Richmond's Physiology & Vol. A.

† Johnson on Tropical Diseases.

‡ Jackson's "Sketch of Febrile Diseases."

‖ Sayre's "Pathology & Therapeutics."

of "life"* than to give a just expression of "cure". A strict analysis and synthesis of the usual symptoms leave us either the bare word, stripped of all signification, or with no small portion of the Nosological table moving in its train.

The pathognomonics now commonly insisted on, are the suppression of the secretions & excretions, & the imperfect circulation.† Nor can these be meant by Pathologists; for by adopting the former, we must necessarily exclude from our definition some forms of fever inserted by Jackson;‡ and if we urge with "former hope" upon the latter we spoil the whole of Parry's Pathology[P] about our ears.

The first objection to the doctrine of critical days which I shall make, is one of ancient date, and formerly one upon which consider

while they was said. The following quotation I consider sufficient to explain & remove it. "The inconsistency of the doctrine was often objected to it. The inconsistency observed by Celsus is this; Hippocrates considers the fourth day of each septenary as critical: hence the fourth and the eleventh (taking the eighth as the first of the second septenary) are critical. But he associates the seventeenth with these, as a fourth; whereas the seventeenth is the third only of the third septenary; for the eleventh is the fourth from the seventh but the seventeenth is only the third from the fourteenth: this makes the twentieth the last of the third septenary, and not the twenty first.

Various conjectures were entertained respecting the origin of these periodical movements in fevers. Some attributing them to

* Rees' Cyclopaedia, Loc. cit.

† Cullen's "First Lines" P. 118 & 122 inclusive.

‡ Good's "Study of Medicine." vol. 2. p. 56.

the harmony & numbers according to the Pythagorean Philosophy, & Celsus and others have concluded that Hippocrates was swayed by this absurd doctrine. But that Juridical state the inquiry just stated, as a proof that Hippocrates deduced his numbers from a faithful observation of diseases." * Dunn who has adopted his explanation in his system of medicine, has given a very candid account of this supposed mysterious influence; admitting that it is a charge to the prejudice of Hippocrates, supposing it a blind & fanciful system" and Dr Fordyce who scarcely does justice to Dunn upon other points, unites with him upon the present, and justly compliments him upon his ingenious examination and explanation of the Greek distinction of critical days" †

It has been urged that the study of modern

practice by disturbing the course of the disease, prevents those appearances from being developed which under the treatment pursued by Hippocrates, were usually manifested. No one, after studying the "Sketch of Febrile Diseases," and notwithstanding the vigorous & efficacious treatment therein recommended and pursued, still finds the venerable author a champion of this theory, will look further for a refutation.

Considering the state of medical knowledge when the doctrine of Crisis was promulgated, we must conclude that the "humoral pathology" highly ingenious in itself received no small support from the appearances exhibited during the times these crises were supposed to occur. The violent agitation of the patient & aggravation of the symptoms, subsiding wholly or in part, upon the appearance of certain discharges; which, when the patient was not too much ex

* Are not Paris's Pathology, and his observations of
similar instances and the circulation, sufficient
proofs of this assertion? Vide also Bichat's Anatomie

hausted by the previous continued violence or successive exacerbations of the disease, were followed by more or less rapid recovery, when circumstances that afforded ample scope for the exercise of genius, and accordingly the ancients improved it to the extent of their opportunities. But when in process of time this doctrine came to be exploded, every subject in any manner connected with its principles underwent the investitures that were heaped upon the general hypothesis. We are not surprised then to see the one doctrine so particularly distinguished by the endeavours to establish its downfall: we know however that many points of that doctrine that once set in obscurity, are again rising above the horizon of medical science.*

It would be unjustifiable here to enter into any discussion, touching the causes,

Periodicals, for an admission, that although disease be not created in the fluids, yet these are often the vehicles of its causes.

* Vide, Mead. Darwin. Balfour. Lind and Jackson on Lunar influence.

† "He may be regarded as laying down the following as the critical days in continued fever viz 3. 5. 7. 9. 11. 14. 17. 20. In other parts of his work he regards not the 4th and 6th and even the 21st as critical days. so that in the first week, every day, after the disease has fully established itself, evinces a disposition to a serious change: in the second week every other day; and in the third week every"

Goods Study of Medicine vol 2. p. 55

what are considered critical terminations: all that we are concerned to know at present, since it is granted that they do occur, is whether they take place at stated periods.*

If we recall the statements of all who have pretended to make observations on the termination of fever we must admit almost every day from the third to the twenty first, as critical. Here we are opposed by an affection of no trifling importance. Hippocrates limited the termination of fever to certain particular days† and unless his observations are confirmed, his theory must be abandoned. It becomes the supporters of the doctrine therefore to furnish us with some clue, whereby we may extricate ourselves from this labyrinth of perplexities.

The primary object to be considered in calculating the duration of fever is the

me by which the time is to be regulated. The
periodical motion of twenty four hours
(numbering from the augment of one, ever) was
in an unnecessary amount, so far as I have
been able to discover until the publication
of Jackson's work in June. Mr Edge, however
proposes a different one in as much as he
wished to limit the [illegible] exception
of all cases of condemned prize to the period
which shall have elapsed during the
time this prize was actually commenced its
attack about 5 or 6 o'clock P.M. is supposed
that we should consider it as always prior
in my discourse. The night [illegible]
as I [illegible] the time, the hour commencing
at 6 o'clock P.M. and ending at the same
hour on the following day. This is another
enemy of Jackson's time which all those
subsequent between 6 P.M. and 6 A.M.

* "For dyce, me Fever."

to be regarded as commencing the attack at 6 P.M. which stands at the mark of the scale; and then duration calculated accordingly. But if a fever appeared between 6 A.M. and 6 P.M. its accession was fixed at 6 P.M. which stands at the foot: and its duration numbered from that point.* Ingenious as this may appear, and supported as it is by most cases of continued fever, it is nevertheless too arbitrary to be universally applied; and unless we have one that may be adapted to every emergency the objection will exist in full force: for as we will perceive in the sequel, it has its origin in this very deficiency of the common method of calculation. Thus the combatants of the opposite party, no longer contented ~~xxxxxxx~~ with ridiculing the circumstances supposed by them to give origin to the subject of debate, deny the facts

which have hitherto been considered as its basis; and appeal at once to the observation and candour of mankind, in a manner in their favour. From the very nature of the opinion it is evident that no very accurate account of remote ages, as many as existence to account. Time would thus occur as well as there as six days & would be wasted in time attended with disappointments to attempt to observe and calculate their appearance. But in the midst of this anarchy when as the sword has thrown his sword into the scale, Friends, a Committee marching to the assembly of the Capitol!

I will explain in as concise a manner as possible the circumstances which suggested to the ingenious and comprehensive mind of Jackson the improvement he has made & the part he has acted in their support.

It would not be exaccurate to assume
that the regularity anticipates or postpones
the time of its usual appearance by a longer
or shorter period, and that frequently in the
course of the disease, there supervenes a fever
of the same or of a different type. Pursuing
this hypothesis, it would be easy to adapt a new method
of calculating the durations of fever. For by
anticipating or postponing the time of its usual
appearance not only the hour but the
day on which an exaccerbation or recurrence
should appear, would be changed, and the
time of crisis would be on an even day,
instead of an uneven day, according to the civil day.
Again, suppose a fever of the same or of a
different type to supervene upon one already
existing, the crisis of the one would not be
critical of the duration of the other. Conse-

quently ; we reckoned from the commencement of the first alone we should frequently find one of them to terminate on an even day, independent of the irregularity occasioned by anticipation or postponement of the paroxysm. He observed also that if relapses were considered as continuations of the original fever, crises would sometimes happen on even days. Accordingly he calculated the durations of fever from its commencement, regulating the length of the day, not by twenty four hours, but by the time included between the accession of each paroxysm and the succeeding one. Supervening fevers he calculated separately according to the same rule : and relapses he dated from the time of their occurrence. His practice shews these improvements to be founded on experience. Of 60 cases that

terminated favourably, ten terminated on the third, ten on the fifth, twenty on the seventh, ten on the ninth, five on the eleventh, three on the thirteenth, and two on the seventeenth. Of nine which terminated fatally, one terminated on the sixth one on the seventh, six on the eighth, and one on the tenth."

The great proportion of fatal terminations on even days attracted his attention. and he found that in referring a crisis to the hour of death he was mistaken. That in reality the crisis took place as usual on the odd day, but that the patient frequently lingered on to the even. "Yet death sometimes happened on the even days from another cause. The decline of the paroxysm which in many cases was hardly perceptable in others was plain. The disease terminated; but another recurring, after a short inter-

* "Jackson on Fever"

val, speedily put a period to existence." "In such cases the patient dies in the height of the paroxysm carried off by convulsions apoplexy or other accident." * The anticipation or postponement of paroxysms, supervention of other fevers, relapses, & varying the time of crisis to the hour of death, have no doubt been the causes of the confusion apparent in the termination of fever when calculated according to the common method.

We may therefore consider these improvements as giving stability to the doctrine, as establishing a new era in its Chronology, as producing a grand characteric in its existence.